

**CLAIMS**

What is claimed is:

1. 1. A method of preparing a crystal polymorph, comprising the steps of:
  2. a. preparing a supersaturated solution of a known substance;
  3. b. selecting a polarization state of light to induce the onset of
  4. nucleation of crystals of the polymorph of the known substance from the
  5. supersaturated solution; and
  6. c. subjecting the supersaturated solution to the light for a period
  7. of time so as to induce the onset of nucleation of the crystals of the polymorph.
1. 2. The method of preparing a crystal polymorph as claimed in Claim 1, wherein the supersaturated solution is aged for a period of 1 hour to 200 hours.
1. 3. The method of preparing a crystal polymorph as claimed in Claim 1, wherein the light is at most minimally absorbed by the supersaturated solution.
1. 4. The method of preparing a crystal polymorph as claimed in Claim 1, wherein the wavelength of the light is near infrared.
1. 5. The method of preparing a crystal polymorph as claimed in Claim 4, wherein the wavelength of the light is 1064 nm.
1. 6. The method of preparing a crystal polymorph as claimed in Claim 1, wherein the light has linear polarization.
1. 7. The method of preparing a crystal polymorph as claimed in Claim 1, wherein the light has circular polarization.
1. 8. The method of preparing a crystal polymorph as claimed in Claim 1, wherein the light has elliptical polarization.
1. 9. The method as claimed in Claim 1, wherein the polymorph is used as a substitute for known polymorphs made under known conditions.
1. 10. The method as claimed in Claim 1, wherein the polymorph is used as a seed material to create larger amounts of the polymorph to be used in known processes.
1. 11. The method as claimed in Claim 1, wherein supersaturation is achieved by a method selected from the group consisting of cooling, heating, solvent evaporation, and altering solvent composition.

1           12. The method as claimed in Claim 11, wherein the solvent is selected  
2 from the group consisting of organic solvents, inorganic solvents, and  
3 supercritical solvents.

1           13. The method as claimed in Claim 1, wherein the substance is  
2 selected from the group consisting of pharmaceuticals, amino acids, peptides,  
3 proteins, carbohydrates, amines, alkanes, alkenes, alkynes, aromatics,  
4 heterocyclic compounds, alcohols, organometallics, and carboxylic acids.

1           14. The method as claimed in Claim 1, wherein the laser light is pulsed.

1           15. The method as claimed in Claim 14, wherein the laser light is  
2 pulsed at between 1 and 100 pulses per second.

1           16. The method as claimed in Claim 15, wherein the laser light pulses  
2 at 10 pulses per second.

1           17. The method as claimed in Claim 1, wherein the supersaturated  
2 solution is subjected to the laser light for a period of between 0.01 second and 1  
3 hour.

1           18. The method as claimed in Claim 17, wherein the supersaturated  
2 solution is subjected to the laser light for a period of between 0.01 second and 60  
3 seconds.

1           19. A method of preparing a crystal polymorph, comprising the steps of:  
2           a. preparing a supersaturated solution of a known substance;  
3           b. aging the supersaturated solution for a period of 1 hour to  
4 200 hours;  
5           c. subjecting the supersaturated solution to the light from a  
6 near-infrared laser emitting light at a selected polarization state for a period of  
7 time so as to induce the onset of nucleation of the crystals of the polymorph.

1           20. The method of preparing a crystal polymorph as claimed in Claim  
2 19, wherein the wavelength of the light is 1064 nm.

1           21. The method of preparing a crystal polymorph as claimed in Claim  
2 20, wherein the power of the light is between 0.1 GW/cm<sup>2</sup> and 10 GW/cm<sup>2</sup>.

1           22. The method of preparing a crystal polymorph as claimed in Claim  
2 19, wherein the light has linear polarization.

1        23. The method of preparing a crystal polymorph as claimed in Claim  
2 19, wherein the light has circular polarization.

1        24. The method of preparing a crystal polymorph as claimed in Claim  
2 19, wherein the light has elliptical polarization.

1        25. The method as claimed in Claim 19, wherein the laser light is  
2 pulsed at between 1 to 100 pulses per second.

1        26. The method as claimed in Claim 25, wherein the laser light pulses  
2 at 10 pulses per second.

1        27. The method as claimed in Claim 26, wherein the supersaturated  
2 solution is subjected to the laser light for a period of between 0.01 second and 1  
3 hour.

1        28. The method as claimed in Claim 27, wherein the supersaturated  
2 solution is subjected to the laser light for a period of 0.01 second and 60 seconds  
3 and the light is at most minimally absorbed by the supersaturated solution.

1        29. The method as claimed in Claim 25, wherein supersaturation is  
2 achieved by a method selected from the group consisting of cooling, heating,  
3 solvent evaporation, and altering solvent composition.

1        30. The method as claimed in Claim 29, wherein the solvent is selected  
2 from the group consisting of organic solvents, inorganic solvents, and  
3 supercritical solvents.

1        31. A method of preparing a crystal polymorph from a known  
2 substance, comprising the steps of:

3            a. preparing a supersaturated solution of the known substance;

4            b. aging the supersaturated solution for a period of 1 hour to

5 200 hours;

6            c. selecting a polarization state of laser light to induce the onset  
7 of nucleation of crystals of the crystal polymorph of the known substance from the  
8 supersaturated solution, wherein the light is at most minimally absorbed by the  
9 supersaturated solution; and

10            d. subjecting the supersaturated solution to the laser light for

11 between 0.01 second and 1 hour so as to induce the onset of nucleation of the  
12 crystals of the polymorph.

1       32. The method as claimed in Claim 31, wherein the laser light is  
2 pulsed at between 1 and 100 pulses per second.

1       33. The method as claimed in Claim 32, wherein the laser light pulses  
2 at 10 pulses per second.

1       34. The method as claimed in Claim 33, wherein the supersaturated  
2 solution is subjected to the laser light for a period of between 0.01 second and 60  
3 seconds.

1       35. The method as claimed in Claim 31, wherein the substance is  
2 selected from the group consisting of pharmaceuticals, amino acids, peptides,  
3 proteins, carbohydrates, amines, alkanes, alkenes, alkynes, aromatics,  
4 heterocyclic compounds, alcohols, organometallics, and carboxylic acids.

1       36. The method as claimed in Claim 35, wherein supersaturation is  
2 achieved by a method selected from the group consisting of cooling, heating,  
3 solvent evaporation, and altering solvent composition.

1       37. The method as claimed in Claim 34, wherein the solvent is selected  
2 from the group consisting of organic solvents, inorganic solvents, and  
3 supercritical solvents.

1       38. The method of preparing a crystal polymorph as claimed in Claim  
2 35, wherein the wavelength of the light is near infrared.

1       39. The method of preparing a crystal polymorph as claimed in Claim  
2 38, wherein the wavelength of the light is 1064 nm.

1       40. The method of preparing a crystal polymorph as claimed in Claim  
2 31, wherein the laser light has a polarization state selected from the group  
3 consisting of linear polarization, circular polarization, and elliptical polarization.

1       41. The method of preparing a crystal polymorph as claimed in Claim  
2 40, wherein the light has linear polarization.

1       42. The method of preparing a crystal polymorph as claimed in Claim  
2 40, wherein the light has circular polarization.

1       43. The method of preparing a crystal polymorph as claimed in Claim  
2 40, wherein the light has elliptical polarization.

1       44. The method as claimed in Claim 31, wherein the polymorph is used  
2 as a substitute for known polymorphs made under known conditions.

- 1        45. The method as claimed in Claim 31, wherein the polymorph is used
- 2        as a seed material to create larger amounts of the polymorph to be used in
- 3        known processes.